of a tabloid-press. The general character of the course is now too well known to call for detailed description.

In the opinion of the writer, the time is ripe for a revision of the optical experiments described in books of this type. The Continental form of the Pulfrich refractometer suffers from a seriously-defective form of water-jacketing, and might with advantage be replaced (in the text-book as well as in the laboratory) by the newer English instrument, which has been improved greatly in this respect. Similar statements may be made in reference to polarimetric apparatus, in which the English makers now enjoy a marked superiority, which might well find acknowledgment in books such as those now under review. The time is also ripe for recognising the great technical importance of the newer sources of monochromatic light, and the advantages they possess over those formerly in use. The introduction of lithium into the sodium flame and of a globule of mercury into a warmed hydrogen vacuum-tube provide, for use with a refractometer, a series of four lines which is much superior to the traditional series CDFG, which has come down to us from the period when sunlight was still the chief illuminant for optical experiments; the fact that the instrument will need to be calibrated for these four wave-lengths (*e.g.*, with a crystal of quartz) is a real advantage from the point of view of the training of the student. For polarimetric work the enclosed mercury arc, which has now almost displaced the sodium flame, both in technical and in scientific laboratories, is ripe for description in the text-books; and it ought to be followed very soon by a description of Dr. Sand's enclosed cadmium arc, the brilliant invention of an English worker, which promises to revolutionise all those branches of optics which depend on the utilisation of powerful sources of monochromatic light. It is curious that both authors should be content with jacketed polarimeter tubes in which only about three-quarters of the liquid is under the direct control of the circulating water.

(3) Mr. Berry's "Volumetric Analysis" represents a distinct advance upon most of the smaller books on the subject, though its advantages are largely neutralised by the very high price which is charged for a volume of less than 140 pages. The method of treatment is more scholarly than is usual in a small text-book, and the inclusion of a chapter on the "Theory of Indicators," based on Mr. Tizard's well-known report, affords welcome recognition of the scientific aspects of the subject. If issued at half the present price the book could be commended heartily for general use in the many laboratories in which volumetric analysis is now taught.

(4) Mr. Aldridge's book is little more than a skeleton, on which a useful course of elementary chemistry may be built up; but it gives the impression that the author is alive to the various educational features that may be embodied in such a course, and the suggestions which he makes should be of real value to other teachers who have not had so long an experience in work of this kind. Specially welcome is the stress which he lays on the full description written by the pupil of his experiments and observations, a description to be written in pencil at the laboratory bench, but written neatly, arranged logically, and expressed in the best English which the boy can command. Such an exercise is certainly better than the barren attempt to induce a boy to express in a formal essay pious opinions on a subject of which he has no special knowledge, and in which his interest is often non-existent.

(5) Dr. Martin's book on "Dyestuffs and Coal-tar Products," issued as the first of a series of manuals of chemical technology, is reprinted with additions from vol. i. of his well-known book on "Industrial and Manufacturing Chemistry," and does not, therefore, call for a detailed review. The sections reproduced deal with the coal-tar industry, synthetic colouring matters, natural dyestuffs, dyeing and colour-printing, inks, saccharine and other sweetening chemicals, modern synthetic drugs, and photographic chemicals. The reproduction of these articles is very opportune at the present time, and will be generally welcomed.

T. M. L.

## OUR BOOKSHELF.

*The Principles of Agriculture through the School and the Home Garden.* By C. A. Stebbins. Pp. xxvi+380. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1913.) Price 4*s.* 6*d.* net.

"DAISIES growing a girl" is the title of the frontispiece of this volume and aptly illustrates its aim. Through practical work in garden and classroom juvenile cultivators are led towards a broad outlook as members of the community. Problems of the garden lead, on the one hand, to problems of the farm, market, and finance, and on the other hand, to those of the home, city, and public health. By their own experience the children learn, not only how seeds germinate and where mosquitoes breed, but also how, on a plot of garden ground, each can take his share of responsibility as a citizen. There are score cards for everything from potatoes to personal hygiene. Even the latter the child scores for himself, and his record counts one-half for his own promotion from class to class in school! Such is "school-gardening" as actually carried out in the Western States to-day.

We wish that every school teacher in this country could read this volume. Every page is

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exhilarating reading, and the pictures not only illustrate the text, but drive home the lesson, sometimes with irresistible force. To the author science is the basis of healthy life and successful industry. The child is led to ask and answer questions; his appetite is whetted, but never satiated, and he is taught to look for scientific guidance to the State Experimental Station or the proper Government Department, the doors of which (in America) are always open to the inquiries even of children. The school has its proper relation, in some ways almost subordinate, to home and environment in the education of the child. If dollars are often mentioned, it is because they are a measure of the success of each worker in contributing to the well-being of the community. Among some pithy maxims in the preface the following may be commended to teachers: "Do not let such matters as an expensive fence prevent gardening. Get along without the fence. A radish more or less will cut no figure."

*Is Venus Inhabited?* By C. E. Housden. Pp. 39. (London: Longmans, Green and Co., 1915.) Price 1*s*. 6*d*. net.

THE uninhabitability of most of the worlds of our system—the sun and moon, Mercury, and the giant planets—is practically assured. Our nearest neighbours, Venus and Mars, remain doubtful; speculation as to life on these worlds is natural and quite legitimate, provided it does not claim greater assurance than the evidence warrants.

Mr. Housden is an enthusiastic adherent of Prof. Lowell's views, and has already written "The Riddle of Mars," supporting the artificial nature of its canal system. He now deals with Venus, assuming the 225-day rotation, and the reality of the spoke-like markings drawn by Lowell. The great heat on the day hemisphere causes convection currents, which deposit the moisture as ice and snow just inside the dark hemisphere, whence some of it is supposed to flow in the form of glaciers into the day hemisphere. He supposes that the zone of this hemisphere where the sun is low is inhabited by intelligent beings, who pump the water back along several conduits (Lowell's spoke markings). He claims to reconcile the contradictory conclusions (1) that the 225-day rotation would precipitate all moisture on the dark side, and (2) that the bright side is largely cloud-covered. But he has built a large superstructure on a slender basis of observed fact.

*The Romance of the Spanish Main.* By Norman J. Davidson. Pp. 313. (London: Seeley, Service and Co., Ltd., 1916.) Price 5*s*.

THIS "Record of the most daring deeds of some of the most famous adventurers, buccaneers, filibusters, and pirates in the western seas," as the sub-title describes the volume, will fascinate boy readers and incidentally teach them much history and a helpful amount of geography, especially if they will trace the various voyages described on a good map. The book is well illustrated and attractively bound.

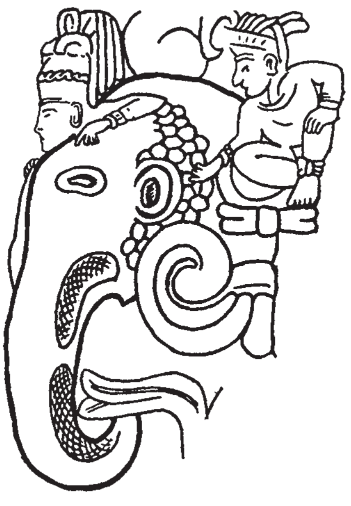
## LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

### Pre-Columbian Representations of the Elephant in America.

MORE than sixty years ago, in his "Incidents of Travel in Central America," Stephens directed attention to an elaborately carved "idol" at Copan, and stated that "the two ornaments at the top look like the trunks of elephants, an animal unknown in that country."

No one who looks at the accompanying tracing, which I have taken from Dr. A. P. Maudslay's magnificent atlas of photographs and drawings of the Central American monuments (Godman and Salvin's "Biologia Centrali-Americana," Archæology, plate xxxiv.), should have any doubt about the justification for Stephens's comment. Moreover, the outline of the head is so accurately drawn as to enable the zoologist to identify the original model for the design as the Indian species of elephant. It is equally clear that the sculptor of the monument was not familiar with the actual animal, for, according to Drs. Maudslay and Seler, he has mistaken the eye for the nostril, and the auditory meatus for the eye, and represented the tusk (note its relation to the lower lip) and the ventral surface of the trunk in a conventionalised manner, without any adequate realisation of the true nature of the features he was modelling.



Certain early Chinese craftsmen adopted a similar convention in their representation of the elephant's tusk and the ventral aspect of the trunk (see, for example, "Chinese Art," vol. ii., Fig. 55, Victoria and Albert Museum Handbooks).

Having converted the auditory meatus into an eye the sculptor had to deal with the auditory pinna, the meaning of which no doubt was a puzzle to him. He resolved these difficulties by converting it into a geometrical pattern, which, however, he was careful to restrict to the area occupied by the relatively small pinna that is distinctive of the Indian species of elephant. (In the representation of elephants on a beautiful Chinese vase of the Ming period, now in the Victoria and Albert Museum, the posterior border of the pinna is lobulated, and suggests a transition to the geometrical pattern of the Copan design.)

The designer also lost his bearings when he came to deal with the turbaned rider of the elephant. No doubt in the original model the rider's leg was obscured by the pinna; but in the Copan sculpture he has lost his trunk also.

All these features go to prove quite conclusively

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